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(54) Title: METHOD FOR INFORMATION TRANSFER VIA ACTIVE ELECTRONIC MAIL

(57) Abstract: The claimed invention relates to a method for information transfer via active electronic mail, wherein the information is encoded and included in an e-mail message and is decoded after receipt of the message. It is specific that the encoded information is fitted into the header of the e-mail message after a specified marker for a specified freely selectable field, and the decoding of the information is done in reading the header of the e-mail message while in access to the e-mail server.

METHOD FOR INFORMATION TRANSFER VIA ACTIVE
ELECTRONIC MAIL

Technical field of the invention

5 The present invention relates to a method of information transfer via active electronic mail and is applicable in transfer of and work with active information in the Internet system.

Prior art

10 A method for transfer of information via active electronic mail is known from the published international PCT application № WO98/49643), where the active information is attached to the body of the electronic letter as a container containing digital information and using built-in executable software.

15 The major disadvantage of this known method is that the access to the active information, transmitted as an attached file, is possible only after the electronic letter is opened.

20 Another disadvantage of the known method is that when sending the active information as an attached file it is also visible for a recipient who cannot interpret it, except in cases when using the e-mail program of the sender.

Summary of the invention

25 The aim of the present invention is to develop a method for transfer of information via active electronic mail compatible with all existing e-mail programs and providing for access to the transferred information before the electronic letter itself is opened.

30 Another aim of the invention is to develop a method for transfer of active information via active electronic mail while the information is being kept invisible for users of other e-mail systems.

These aims have been reached by the method for active information transfer via active electronic mail where the information is

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encoded and is nested into an e-mail message, and after the receipt of the message the information is decoded. The method is characterized by the fact that the encoded information is integrated in the header of the e-mail
5 message after a specified marker for a specified freely selectable field, and the information is decoded in reading the header of the e-mail message while accessing the e-mail server.

It is advisable that the information encoding includes its transformation from a binary type in an ASCII flow, which is broken into
10 lines and is thus inserted in the header of the message, and after the message is received in the e-mail server, decoding is done by transforming back the lines into an ASCII flow, which is transformed into a binary type.

In one variant of embodiment of the method, the information is either binary or text data, such as graphic, audio, video, image,
15 Spreadsheet, etc.

In another variant of embodiment of the method, the information is one or more objects of any structure and functionality.

In another variant of embodiment of the method, the information is an executable or interpretable code.

20 In another variant of embodiment of the method, the information contains instructions for event/parameter sensitive functions or processes.

In another variant of embodiment of the method, the information is instructions for running of local programs with or without transfer of parameters.

25 In another variant of embodiment of the method, the information is any combination of the types of information mentioned above.

In an advantageous variant of embodiment of the method, the information is compressed before being encoded and is decompressed after being decoded.

30 In another advisable variant of embodiment of the method the encoded information is attached after the X-marker of the X-extended field.

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The method in accordance with the present invention has the advantage of being compatible with the common e-mail technologies providing at the same time the possibility for transfer of active information
5 in the header of the electronic letter. In using the method in accordance with the present invention the transferred information is kept invisible for recipients who use other e-mail programs. The method provides for the display of data of any type in the inbox or on the Desktop, as well as the running of processes of any type depending on the data content in the
10 header fields.

Examples of embodiment of the invention

In view to better clarify the way of embodiment of the method in accordance with the present invention, the valid standards and the
15 structure of an electronic message (e-mail) are presented below.

Protocols for sending and receipt of electronic mail:

SMTP – Simple Mail Transfer Program Protocol;

POP3 – Post Office Protocol;

IMAP4 – Internet Message Access Protocol.

20 The structure of an e-mail is determined by the RFC822 standard.

An e-mail message consists of a header and a body. Adhering to the RFC822 standard guarantees the compatibility of the e-mail message with the other e-mail programs and its transfer via the supporting of POP3 and IMAP4 e-mail servers.

25 The use of US-ASCII-7 code table (ISO 8859-1 to ISO 8859-9) should also be guaranteed (by the respective encoding method - BASE64 for example).

According to the RFC822 standard the structure of the e-mail header is as follows:

| 30 | Field | Description |
|----|--------|--------------------------------------|
| | FROM | e-mail address of the message owner |
| | SENDER | e-mail address of the message sender |

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| | | |
|----|------------|---|
| | REPLY_TO | e-mail address receiving a reply to an e-mail |
| | TO | e-mail address of the recipient |
| | CC | e-mail address of a recipient of a copy |
| 5 | DATE | date/time |
| | SUBJECT | topic |
| | COMMENT | comments to the message |
| | X-extended | arbitrary fields, specific for a given e-mail program, being ignored by the other e-mail programs. This fields should start with X, for example X-data. |
| 10 | | |

The method in accordance with the present invention makes provision for freely selectable fields to be used for the transfer of specific information. Depending on the content of this information the e-mail program is performing event sensitive procedures and functions and this is done before the body of the electronic message is transferred or read, i.e. before access is obtained to the body of the electronic message or to the attached files.

In order to identify and display the sender, the subject and the size of an e-mail, the e-mail programs read the header of the electronic message while it is on the e-mail server. Here, the whole header is read, but not the body of the e-mail or the attached files.

According to the method of the present invention, the information recorded in the X-extended or comment field (fields) is interpreted at the moment of reading the header (on the e-mail server) and depending on its content, this information is displayed or executed. The method provides for the use of all fields of the header, which are not used or are being partially used by the standard e-mail programs.

The header of an e-mail message, prepared using the method in accordance with the present invention, could be of the following type, for example:

Return-Path: <sherlock>

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Received: (qmail 1061 invoked from network); 10 May 2000 14:41:38-0000
Received: from dialup2-68.access.nacamar.de(HELO KLAUS.DOMAIN)
(62.144.249.68) by authsrv.nacamar.de with SMTP; 10 May 2000 14:41:38 - 0000
5 Message-ID:1219491.954859169410.JavaMail.faxserver@KLAUS.DOMAIN
Date: Tue, 4 Apr 2000 16:39:29 +0200 (GMT+02:00)
FROM: sherlock <sherlock>
TO: xitec@t-online.de
SUBJECT: test
10 CC: kocomp@t-online.de
Mime-Version: 1.0
Content-Type: text/html
Content-Transfer-Encoding: 7 bit
X-DATA:
15 pvf7Axf+5vY3L7eXlv1sAWFN5Wyb1e5wK+zFv9STf6IndzP/nPpebq9E+tkd0foS7U2R
Sryz
8ujmiLNaR+fJR8zoIPL5PzySenJ/ok1V/xP8+5PdfGrVCgKcoUaHEktLEG Rpsj5dX
auL1kt
R+fJR8zoIPL5PzySenJ/ok1V/xP8+5PdfGe5wK+zFv9STf6IndzP/nPpebq9E+tkd0foS
20 7U2R5ryz
e5wK+zFv9STf6IndzP/nPpebq9E+tkd0foenJ/ok1V/xP8+5PdfGrVCgKcoUaHEktLEG
Rpsj5dXauL1kt
pvf7Axf+5vY3L7eXlv1sAWFN5Wyb1e5wK+zFv9STf6IndzP/nPpebq9E+tkd0foS7U2R
Sryz zFv9STf
25 wK+zFv9STf6IndzP/nPpebq9E
nJ/ok1V/xP8+5PdfGrVCgKcoUaHEktLEG Rpsj5dXauL1kt zFv9STf
nJ/ok1V/xP8+5PdfGrVCgKcoUayb1e5wK+zFv9STf6IndzP/nPpebq9E+tkd0foS7U2R
Sryz zFv9STf
8ujmiLNaR+fJR8zo 1V/xP8+5PdfGrVCgKcoUaHEktLEG Rpsj5dXauL1kt zFv9STf
30 zFv9STf zFv9
pvf7Axf+5vY3L7eXlv1sAWFN5Wyb1e5wK+zFv9STf6IndzP/nPpebq9E+tkd0foS7U2R
Sryz zFv9STf

- 6 -

zFv9STf6IndzP/nPpebq9EnJ/ok1V/xP8+5PdfGrVCgKcoUaHEktLEGRpsj5dXauL1kt
zFv9STf
R+fJR8zo!PL5PzySenJ/ok1V/xP8+5PdfGe5wK+zFv9STf6IndzP/nPpebq9E+tkd0foS7U2
R5ryz
5 f6IndzP/nPpebq9E+tkd0foenJ/ok1V/xP8+5PdfGrVCgKcoUaHEktLEGRpsj5dXauL1
kt zFv9STf

The example above presents an object, in this case a JPG-File, in
the inbox of the e-mail program. The object can be interpreted only by an
10 e-mail program that uses the method in accordance with the present
invention. For all other programs this object is invisible.

The information content of the data additionally transferred into the
header could be: binary or text data (image, video, audio, text,
Spreadsheet, etc.); one or more objects of any structure and functionality;
15 executable or interpretable program codes; instructions for
event/parameter sensitive procedures and functions or processes;
instructions for running local programs with or without transfer of
parameters, as well as any combination of such data.

The technology for data transfer by the method according to the
20 present invention is as follows:

Data transfer:

The types of data mentioned above are compressed or
uncompressed and encoded in ASCII-7 code (for example by the BASE 64
algorithm), which results in an ASCII flow of specific length. Compressing
25 the data is not a compulsory operation of the method of the present
invention. A X-marker in the X-extended field is placed in the header (other
markers could be used in other fields). The ASCII flow is broken into lines
(the maximum line length being 80 signs) and is attached after the marker.
The header prepared in the above mentioned method is then used for the
30 transfer of the electronic mail.

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Data receipt:

The electronic messages available on the e-mail server are read (with command List POP3Protocol, IMAP4 or with command FETCH, PARTIAL IMAP4). While the commands are executed, all data contained in 5 the header of the read electronic messages are transferred. In this way the information attached after the X-marker is also transferred, and this is done before the transfer of the message body or the attached files. The lines after the X-marker are fitted together in an ASCII flow, which is transformed into a binary flow (through BASE 64, for example) and is eventually 10 decompressed. If the information is graphic, video, audio or text data, the data are displayed. If the information is one or more objects of any structure and functionality, then these objects are executed. Such objects provoke the running of processes (WEB, FTP, running of local programs). Such process could be event controlled (by a button or mouse click, etc.). 15 Furthermore, if the information transferred is an executable or interpretable code, then this code is executed.

All functions mentioned above are done during the access to the e-mail server reading the catalogue with the e-mail messages available on it. Of course, it is possible for the objects or functions to be programmed in 20 such a way that their execution be done later or made event sensitive.

The functions which could be executed while reading the e-mail directory on the e-mail server (download/reading of an electronic message/saving an electronic message/opening/closing an e-mail) are presented below. These functions could be:

- 25 automatic or user-interactive display of graphic objects;
- automatic or user-interactive execution of video, audio, flash, etc.;
- automatic or user-interactive starting of parts of programs, shifted into the header or down-loaded from the Internet server, where the shift is provoked by the e-mail;
- 30 automatic or user-interactive starting of programs or parts of programs shifted into the message body;

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automatic or user-interactive download of the electronic message body or files attached to it;

automatic or user-interactive exchange of digital signatures;

automatic or user-interactive Reply-Mail if requested by the sender;

5 automatic or user-interactive encoding;

automatic or user-interactive compression of data;

automatic or user-interactive data processing with programs available on the Internet server (for example, translation of an electronic message from one language into another, Import/Export files in/to other formats, etc.);

10 automatic or user-interactive control on the rights for sending/receipt through checking-up of certificates;

automatic or user-interactive control of the server (local, remote or Internet server based on IP-addresses) with retrieval of pages, directories, programs, data, scripts, plug-ins, etc.;

15 automatic or user-interactive installing and removal, configuration, software updating;

starting of local and/or network resident virus scanners and/or safety programs, query for passwords and/or other identification tools

20 (PIN, Fingerprint, Retinal eye scan, Biomass);

modifications, redesign, joining of new graphic elements or controllable functions (Active Links, for example) in an interactive user regime;

25 maintenance of Workflow-Management and Groupware applications;

managing of applications with Signal Processing;

maintenance of goods inventory systems (Warehouse, e-commerce)

The possibilities for embodiment of the method in accordance with

30 the present invention described so far are illustrative only. They should not be considered, on any account, as restrictive to the scope of protection, defined in the enclosed claims.

PATENT CLAIMS

1. A method for information transfer via active electronic mail, wherein the information is encoded and included in an e-mail message and is decoded after receipt of the message, characterized in that the encoded information is fitted into the header of the e-mail message after a specified marker for a specified freely selectable field, and the decoding of the information is done in reading the header of the e-mail message while in access to the e-mail server.
5
10. 2. A method in accordance with claim 1, characterized in that the encoding of the information includes its transformation from a binary type in an ASCII flow, which is broken into lines and is thus fitted into the header of the message, and after the message is received in the e-mail server, decoding is done by transforming back the lines into ASCII flow, which is transformed into a binary type.
15
15. 3. A method in accordance with claim 1 or 2 characterized in that the information is either binary or text data, such as graphic, audio, video, image, Spreadsheet, etc.
20
20. 4. A method in accordance with claim 1 or 2 characterized in that the information is one or more objects of any structure and functionality.
25
25. 5. A method in accordance with claim 1 or 2 characterized in that the information is an executable or interpretable code.
30
30. 6. A method in accordance with claim 1 or 2 characterized in that the information represents instructions for event/parameter sensitive functions or processes.
25
25. 7. A method in accordance with claim 1 or 2 characterized in that the information represents instructions for running local programs with or without transfer of parameters.
30
30. 8. A method in accordance with claim 1 or 2 characterized in that the information is any combination of the types of information mentioned in the above claims 2 to 7.

- 10

9. A method in accordance with one of the claims 1 to 8 characterized in that the information is compressed before being encoded and is decompressed after being decoded.
- 5 10. A method in accordance with one of the claims 1 to 9 characterized in that the encoded information is attached after the X-marker of the X-extended field or after a specific marker of the comments field.

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 00/01086

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G06F17/60

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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| Y | | 5-7 |

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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| 29 May 2001 | 13/06/2001 |
| Name and mailing address of the ISA European Patent Office, P.B. 5618 Patentlaan 2 NL - 2280 HV Rijswijk Tel: (+31-70) 340-2040, Fax: 31 651 epo nl Fax: (+31-70) 340-3016 | Authorized officer Nicolli, F |

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C(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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Information on patent family members

International Application No

PCT/IB 00/01086

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
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